



**State of Delaware Department of Natural Resources and Environmental Control  
Site Investigation and Restoration Branch**

**Final Brownfield Remedial Action Plan  
For 11<sup>th</sup> and Church Street (Wilmington Rolling Mill)  
Wilmington, Delaware  
DE-1198  
January 2005**

**INTRODUCTION TO  
DELAWARE'S  
BROWNFIELDS PROGRAM**

The Department of Natural Resources and Environmental Control (the Department) is committed to implementing Delaware's Hazardous Substance Cleanup Act (HSCA). Historically, the Department's energies have been focused on contaminated sites that have an immediate impact on public health and the environment. Recently the Department has expanded its purview to address idle or abandoned properties with known or perceived contamination (Brownfields), which when addressed serve as a benefit to their associated communities. These efforts are complemented by the creation of new jobs as new businesses establish themselves and help revitalize the surrounding communities. In addition, the use of Brownfields instead of pristine areas or "greenfields", results in the continued preservation of Delaware's precious open space.

Delaware's Brownfield Program is intended to be a comprehensive and evolving (i.e. "evergreen") program.

The Program will seek to gather as much available information as possible on a Brownfields site in order to expeditiously move a project from investigation and remediation to redevelopment.

**SITE REDEVELOPMENT PLAN**

Brownsapes, LLC is the prospective purchaser of the site located at 11<sup>th</sup> and Church Street, Wilmington (Wilmington Rolling Mill). This group plans to construct residential housing on the property. The exact nature of this residential construction has yet to be determined. The development will be located at the intersection of 11<sup>th</sup> and Church streets on tax parcel #s 26-036.3-0706 and 26-036.3-0707. It is anticipated that the site will be accessed from 10<sup>th</sup> and 11<sup>th</sup> streets as well as from Church St. Please see Figure 1, which locates the Site on a USGS topographic map.

**COMMUNITY OUTREACH PLAN**

Brownsapes LLC has had several meetings with representatives of the City of Wilmington and has presented a proposed conceptual development plan

at a Wilmington Cluster meeting. Once the Final Brownfields Remedial Action Plan has been adopted and the property is owned by Brownscales, they intend to meet with local community leaders and council persons to incorporate their feedback into the final development plan.

#### **PURPOSE**

This Final Brownfield Remedial Action Plan (FBRAP) presents the Department of Natural Resources and Environmental Control's (DNREC) preferred remedial alternative for the former Wilmington Rolling Mill property (Site) in Wilmington, Delaware.

The purpose of this FBRAP is to provide specific information about the soil and groundwater contamination and the DNREC's selected remedial actions for the Site. As described in Section 12 of the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations), DNREC provided notice to the public and an opportunity for the public to comment on the proposed Brownfield Remedial Action Plan (PBRAP). During the comment period of December 19, 2004 through January 10, 2005, DNREC did not receive any comments on the PBRAP; therefore, the proposed plan has been adopted as the final plan. The final plan designates the selected remedy of the site.

This FBRAP includes the findings of the Remedial Investigation (RI) report and discusses the site risk assessment, the proposed conceptual development plan for the site and a discussion of the remedial alternative. See the box entitled, "To View Referenced Documents" for information on how to review the full version of the Brownfield

Preliminary Assessment II and Remedial Investigation Report for this Site as well as other documents in the Remedial Decision Record.

The FBRAP includes remedial actions for groundwater based on its current and anticipated future use. Groundwater is considered a resource of the State of Delaware and if the future use of the groundwater resource in the area of the site changes, or if it becomes known that groundwater conditions related to the site result in an unacceptable risk to public health and/or the environment, additional remedial actions shall be required.

## Plan Applies to the Wilmington Rolling Mill Property

The Site is located in the vicinity of the intersection of 11<sup>th</sup> and Church Streets in Wilmington, DE. The properties occupy approximately 3 acres. Figure 2 shows the Site location and property boundaries.

## Site History

Site ownership and history from previous documents is summarized below:

- ◆ 1884 - Seidel and Hastings Co. (Wilmington Plate Iron Rolling Mills).
- ◆ 1893 - A rail line and coal yard present on the eastern and northern portion of the property.
- ◆ 1901 - Coal yard owned by John Hamilton; Seidel and Hastings Co. still owned southern portion of the Site.
- ◆ 1915 - 1929 Hamilton Coal Co. No buildings or rail lines present
- ◆ 1929 - 1946 Walker Snyder-Conly Co.
- ◆ 1946 - 1971 McCormick Construction.
- ◆ August, 1971 - McCormick Erectors, Inc.
- ◆ 1971-Present - Estate of George Horn.

## Why was DNREC Involved

DNREC completed a Brownfield Preliminary Assessment of the Site and reported our findings in 2000 (*Brownfield Preliminary Assessment II Wilmington Delaware, Wilmington Iron Plate Rolling Mill, September 2000*). This investigation reported elevated concentrations of arsenic, and semi-volatile organic compounds (SVOCs) in

## To View Referenced Documents

Documents referenced in this fact sheet can be viewed during normal business hours at:

DNREC-SIRB  
391 Lukens Drive  
New Castle, Delaware

Or the  
Wilmington Public Library

And are posted online at:  
<http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/SIRB/sitefiles.asp>  
under Wilmington Rolling Mill

## Public Comments

If you have any questions or comments regarding the site or would like to review reports or other information regarding the site, please direct written comments to:

Mr. Rick Galloway  
DNREC-SIRB  
391 Lukens Drive  
New Castle, DE 19720-2774  
(302) 395-2600

\*Notice: The publication of this FB RAP fact sheet fulfills requirements of the Delaware Hazardous Substance Cleanup Act (HSCA) and the Regulations Governing Hazardous Substance Cleanup (Regulations).

surface soil. Other substances were also reported at elevated concentrations in surface soil in select locations. The Remedial Investigation (RI) was completed by Environmental Alliance, Inc. (Alliance) on behalf of the prospective purchaser of the property. The RI investigated surface soil, subsurface soil, groundwater and the

sediments of the Brandywine Creek adjacent to the property. The RI identified several substances at concentrations above Delaware's Uniform Risk Based Remediation Standards (unrestricted site use). The Site is located in a Non-Critical Water Resource Area.

In surface soil, the following inorganic substances were identified at least once in exceedance of their respective unrestricted use URS value; arsenic, iron, manganese, lead, vanadium, aluminum, antimony, and copper. The following organic substances were identified in surface soil at least once in excess of their respective unrestricted use URS value; benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd) pyrene.

In subsurface soil arsenic, aluminum, and iron were the inorganic substances identified at least once at a concentration in excess of their respective unrestricted use URS concentrations. The organic substances benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene were also identified at a concentration in excess of their respective unrestricted use URS value.

In groundwater, iron, manganese and 1,2 Dichloroethane (EDC) were identified in the dissolved state at a concentration in excess of their respective URS groundwater values. The iron and manganese are not believed to be present as a result of historic Site operations since these substances have been reported in groundwater at surrounding sites that do not have a history of metal fabricating. Similarly, the EDC

identified in groundwater is not believed to be Site related since it was found at a concentration slightly exceeding its URS value only in the upgradient monitoring well and it was not detected in any of the other soil or other groundwater samples collected at the Site.

In sediment, the following organic substances were identified in excess of their respective URS protection of the environment values; benzo(a)anthracene, benzo(a)pyrene, and fluoranthene. These substances are not considered to be present as a result of historic activity at the Site since DNREC has identified these substances (and other substances) as being present at similar or greater concentrations in sediment throughout the Christina River Basin.

In addition to the RI, a separate Site investigation was completed subsequent to a fire at the property. The purpose of this investigation was to determine if the fire caused any environmental degradation in addition to that identified in the preceding RI (the fire occurred after the sampling associated with the RI). The fire investigation further identified lead in surface soil. The data collected as part of this investigation was considered in the risk assessment for the Site.

### **Cleanup Action Objectives**

In keeping with the HSCA Regulations, site-specific Remedial Action Objectives (RAOs) must be established for all plans of remedial action. The Regulations require that DNREC set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment.

## **Risk Assessment**

The purpose of the risk assessment is to estimate the potential health and environmental impacts of exposure to toxic chemicals at the Site. Risk assessments estimate the increased occurrence of health effects resulting from exposure to contamination. For example, a one in a million increase level of risk ( $1 \times 10^{-6}$ ), corresponds to one person in a million having an increased risk of a cancer occurring based on exposure to contamination. DNREC considers a cumulative, increased cancer risk higher than one in one hundred thousand ( $1 \times 10^{-5}$ ) as unacceptable.

Using the data collected as part of the RI and the subsequent investigation following the fire, a risk assessment was completed for the Site. The risk assessment evaluated the potential risks for various assumed potential future exposure scenarios. The scenarios evaluated included: residential exposure to surface soil, residential exposure to subsurface soil, residential exposure to groundwater, recreational exposure to sediments, and exposure to surface and subsurface soil by construction workers as part of the development of the property. The risk assessment completed for this Site identified the following potentially unacceptable risks at the Site:

- A potentially unacceptable carcinogenic risk associated with ingestion of surface soil by future residents was identified. The primary substance contributing to this risk is arsenic with several SVOCs also contributing to the potentially unacceptable risk.

- A potentially unacceptable non-carcinogenic risk was identified based upon the presence of iron and lead in the surface soil.
- A potentially unacceptable carcinogenic risk was identified with ingestion of groundwater under a residential ingestion exposure scenario. The substance in groundwater contributing to this unacceptable risk is 1,2 Dichloroethane (EDC). EDC is not considered a Site related contaminant. Furthermore, mass loading calculations for EDC indicate that EDC is not a source of contamination to Brandywine Creek.
- A potentially unacceptable non-carcinogenic risk was identified for ingestion of groundwater under a residential exposure scenario. This non-carcinogenic risk is associated with the presence of iron and manganese in groundwater. These substances were found in groundwater at the Site at concentrations similar to other properties in the vicinity of the Site that do not have a history of metal fabricating.

The risk assessment did not identify unacceptable potential risks associated with the exposure to subsurface soil or river sediments or by exposure to soil by construction workers. Substances that have been identified in the river sediments are consistent with the substances DNREC has generally identified in the Christina River Basin and are not considered Site related. No remedial actions relative to the river

sediments will be required to address human health or the environment.

### **Qualitative Objectives**

Qualitative objectives describe, in general terms, what the ultimate result of the remedial action should be. The following qualitative objectives have been determined to be appropriate for the Site:

1. Eliminate the pathway for exposure to substances of concern in surface soil.
2. Prevent use of groundwater for all purposes at the Site.
3. Control potential contaminated soil erosion and subsequent overland transport of contaminated surface water to Brandywine Creek.

These objectives are consistent with applicable zoning policies, state regulations governing water supply, worker health and safety and HSCA.

### **Quantitative Objectives**

Quantitative objectives define specific levels of remedial action to achieve protection of human health and the environment. Based on the qualitative objectives, the quantitative objectives will be used to ensure that future Site users such as residents, workers, visitors, and trespassers do not come in contact with soils that contain elevated levels of arsenic, lead, iron, and SVOCs, and with groundwater that contain elevated levels of EDC and dissolved iron and manganese above the established unrestricted URS groundwater values or default background concentrations.

Based on the qualitative objectives, the quantitative objectives are:

1. Prevent human exposure in a residential scenario to surface soils (0-2 feet) contaminated by substances exceeding the State default background standard of 22,000 ppm for iron, the health based concentration of 23 ppm for arsenic, and the following substances at concentrations exceeding their unrestricted use URS concentration; lead (400 ppm), benzo(a)pyrene (0.09 ppm), benzo(a)anthracene (0.9 ppm), benzo(b)fluoranthene (0.9 ppm), dibenz(a,h) anthracene (0.09 ppm) and indeno(1,2,3-cd) pyrene (0.9 ppm).
2. Prevent human exposure to groundwater at the Site; and,
3. Manage and mitigate environmental risks, as they occur during the building construction and redevelopment process, in accordance with a DNREC-approved, Site-specific Soil Management Plan. This will include, but is not limited to, removal of underground storage tanks (USTs) and petroleum-impacted soil, if discovered, in accordance with *Delaware's Regulations Governing Underground Storage Tank Systems*.

### **Final Brownfield Remedial Action Plan:**

Based on the RI and risk assessment completed at the Site, an unacceptable risk to human health exists based on the exposure to surface soil at the site assuming a residential setting. The exposure to groundwater assuming the groundwater is a source of drinking water also poses an unacceptable risk.

In order to address the above-identified potential risks, DNREC's final remedy for the Site includes the following three elements:

**I) Surface Soil:**

Any surface soil that contains a substance in excess of the quantitative objectives listed in the previous sections of this final plan shall complete one of the three following remedies:

1) Capped with 2 feet of DNREC-approved clean fill. If the site construction plan includes recreational areas such as but not limited to playgrounds or gardens, a geo-textile fabric shall be installed under the clean fill as a visual demarcation in order to protect residential users from future exposure to the soils.

2) Consolidated in an area approved by DNREC and capped in place by activities associated with the development of the property.

3) Excavated to a depth of two feet and properly dispose of offsite and capped with 2 feet of DNREC-approved clean fill.

**II) Soil Management during Site development:**

- 1) A DNREC approved Soil Management Plan (SMP) will be prepared before any development of the property occurs. This SMP will document how the surface soil will be managed in accordance with the above requirements.

- 2) A DNREC approved Erosion and Sediment Control Plan (E&S Plan) will be implemented prior to any property development to prevent any surface soils from discharging from the Site.

**III) Post-Development**

- 1) A deed restriction preventing soil disturbing activities will be placed on the Site for areas where surface and subsurface soils that contain concentrations of contaminants above remedial action objectives are capped in place.
- 2) A Ground Management Zone (GMZ) is already in place for the affected area (i.e., the City of Wilmington). The GMZ will prohibit the installation of any water wells on, or groundwater usage at the Site without prior written approval of DNREC. The existence of the GMZ and its requirements will be noted on the deed for the property.

This final plan includes remedial actions for groundwater based on the Department's best understanding of the current and anticipated future use of groundwater at or near the site. Groundwater is considered a valuable resource in the State of Delaware. Therefore, if the actual or potential future use of the groundwater resources at or near the site changes or if it becomes known that groundwater conditions related to the site result in an unacceptable risk to the public health and/or

the environment additional remedial actions shall be required.


- 3) A DNREC approved Operations and Maintenance (O&M) Plan for the Site will be finalized within 90 days following completion of construction. The O&M Plan will document the procedures for evaluating the integrity of any capped areas as well as all other remediation related activities at the Site.

### **Time Frame**

The actions identified in this final brownfield remedial action plan will be implemented in conjunction with the schedule for the redevelopment of the property. The development schedule will be based upon the completion of development plans and approvals from various government agencies.

### **Declaration**

The FBRAP for the Site is protective of human health, welfare and the environment, and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

  
Marjorie A. Crofts, Acting Director  
Division of Air and Waste Management

2/2/05  
Date of Review

**\*\*All remedial actions shall comply with applicable local, state, and federal laws and regulations.\*\***

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